REPORT

OF THE

Indian Tariff Board

ON THE

SODIUM SULPHIDE INDUSTRY

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Sir R. K. SHANMUKHAM CHETTY, K.C.I.E.—President.

Mr. C. C. DESAI, C.I.E., I.C.S.—Member-Secretary.

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REPORT ON THE SODIUM SULPHIDE INDUSTRY

Reference to the Board.

1. The case of the Sodium Sulphide Industry was referred to the Indian Tariff Board for investigation by the Commerce Department of the Government of India in their Resolution No. 218-T (55)/45, dated the 4th May 1946, read with paragraphs 2 and 7 of the Commerce Department Resolution No. 218-T (55)/45, dated the 3rd November 1945. The reference was made at the instance of (1) Liberty Chemical Works, Bombay, and (2) Chemicals and Solvents, Ltd., Calcutta, who asked, in their letters dated the 29th October and 22nd November 1945, respectively, for inclusion of this industry for consideration by the Tariff Board.

Terms of reference.

2. The terms of reference to the Board contained in the Resolution, dated the 3rd November 1945 are as follows :—

> " In the case of each industry the Board will, after such examination as it considers necessary, report whether the industry satisfies the following conditions :—
>
> (1) that it is established and conducted on sound business lines ; and
>
> (2) (*a*) that, having regard to the natural or economic advantages enjoyed by the industry and its actual or probable costs, it is likely within a reasonable time to develop sufficiently to be able to carry on successfully without protection or State assistance ; or
>
> (*b*) that it is an industry to which it is desirable in the national interest to grant protection or assistance and that the probable cost of such protection or assistance to the community is not excessive. Where a claim to protection or assistance is found to be established, i.e., if condition (1) and condition (2) (*a*) or (*b*) are satisfied, the Board will recommend—
>
> (i) whether, at what rate and in respect of what articles, or class or description of articles a protective duty should be imposed ;
>
> (ii) what additional or alternative measures should be taken to protect or assist the industry ; and
>
> (iii) for what period, not exceeding three years, the tariff or other measures recommended should remain in force.
>
> In making its recommendations the Board will give due weight to the interests of the consumer in the light of the prevailing conditions and also consider how the recommendations affect industries using the articles in respect of which protection is to be granted. Since relief, to be effective, should be afforded without delay, the Board is requested to complete its enquiries with all possible expedition and to submit a report as soon as the investigation of the claim of each industry is concluded."

Method of Inquiry.

3. On the 27th June 1946, the Board issued a press communique inviting associations, firms, or persons, including producers, importers and consumers, directly interested in this industry, or dependent upon it for their raw materials, who wished their views to be considered, to submit their representations. The Board

also followed up the communique with a detailed questionnaire. A list of persons, associations or firms to whom the questionnaire was issued and from whom replies or memoranda were received will be found in Appendix I and Appendix II, respectively. The sodium sulphide works at Jodhpur was visited by the whole Board on the 1st December 1946. The Dharamsi Morarji Chemical Works at Ambernath near Bombay and the Liberty Chemical Works, Andheri, Bombay, were visited by Mr. C. C. Desai on the 12th and 13th December 1946, respectively. These three factories were also visited by the staff of the Tariff Board, including Deputy Secretary, Technical Adviser, and Cost Accounts Officer on the same dates. The cost of production at the Jodhpur sulphide factory and at the Dharamsi Morarji Works, Bombay, was examined by the Cost Accounts Officer with a view to comparing the same with the landed cost in order to measure the degree of competition affecting the industry. Oral evidence of producers, consumers, and importers was taken at Bombay on the 16th December 1946. A list of the witnesses examined is appended (Appendix III).

History of the Industry.

4. There was no production of sodium sulphide in India before the war, all the requirements being met from imports. Towards the end of 1942, arrangements for the import of sodium sulphide failed and considerable difficulty was experienced by the textile and tanning industries in meeting the requirements of the Defence Services for textiles and leather. The question of developing the sodium sulphide industry in India became urgent and was immediately taken up. Shortly before that time (i.e., in 1940-41) extensive deposits of sodium sulphate, from which sodium sulphide is manufactured, were discovered by Mr. J. N. Shah, an officer of the Central Board of Revenue, Government of India, at Didwana in the Jodhpur State, which made it possible to establish the industry in the country. The scarcity of sodium sulphide led to fancy prices for this product which rose from Rs. 7 per cwt. before the war to as much as Rs. 250 per cwt. and a number of producers began to manufacture sodium sulphide of indifferent quality and with improvised equipment. The Department of Supply encouraged the Jodhpur State to go in for large scale production of sodium sulphide, taking advantage of the existence of sodium sulphate in the salt area of Didwana in the State. The smaller producers either obtained sodium sulphate from Jodhpur or used the sodium sulphate which was left over as a by-product in the manufacture of bichromates or hydrochloric and nitric acids as in most foreign countries. There was no control over either production of sodium sulphide or its distribution or its price during wartime. Assistance by Government to the development of the industry was confined to the Jodhpur enterprise in view of its long-term and peacetime prospects. At present, eight firms are known to have some equipment for the production of sodium sulphide, *vide* statement in Appendix IV. That statement gives the name and address of each factory, its location, date of commencement of production, annual production capacity as declared by each factory, and actual production over a continuous period of twelve months. It will be seen from the list that only the Jodhpur factory has a large production capacity, though, so far, practically no sodium sulphide has been manufactured by it. The factory has just started production when the Board visited the works on the 1st December 1946. Even then the amount produced was one ton per day, which is one-tenth of the rated capacity of the factory. Of the other producers, Chemicals and Solvents, Ltd., Calcutta, one of the two applicants for protection, are not in production and did not even care to attend the inquiry, showing that their application was premature and half-hearted. The only other factory interested in the inquiry was Dharamsi Morarji, Bombay, the capacity of which is small and the production of which is confined to the utilization of sodium

sulphate left over after the manufacture of hydrochloric and nitric acids. It was disclosed during the inquiry that the Pioneer Chromate Works, Ltd., Bombay, had installed plant and equipment for a production of 150 tons of sodium sulphide per month, but in the absence of power, the production had not commenced. The factory did not expect to commence production for another six months. The Jodhpur factory took much longer to be established than originally anticipated and in the meantime the supply position of sodium sulphide improved to such an extent that its price fell to about Rs. 20-4-0 per cwt. in 1943, driving the smaller producers out of production. It was as a result of this fall in price that a firm called Caprihans in Agra, which was the first to produce experimentally sodium sulphide of acceptable quality, and the Liberty Chemical Works, Bombay, among others, had to shut down leaving their plant idle. The Jodhpur factory, which was started by the Jodhpur Government as a State concern, preferred not to go into production and, after considerable delay, was sold to a private firm, which is now taking steps to commence production on a commercial scale. It is expected that in future the Jodhpur factory production will meet the bulk of the demand in the country and that production on a small scale will be undertaken by those chemical works which have before them the problem of utilization of sodium sulphate which is a waste by-product and the disposal of which presents a problem to industries like bichromates and acid manufacture. In this latter category will fall factories like Pioneer Chromate Works, Ltd., and Dharamsi Morarji Chemical Co., Ltd., of Bombay.

Process of manufacture.

5. The raw materials required for the manufacture of sodium sulphide are (1) Sodium sulphate (or salt cake) and (2) powdered coal. Different producers obtain their requirements of sodium sulphate from different sources according to their convenience. The Jodhpur factory is based on sodium sulphate obtained from the natural deposits at Didwana in the Jodhpur State ; the Dharamsi Morarji Works in Bombay use the sodium sulphate which is a by-product of their hydrochloric or nitric acid manufacture ; whereas the Pioneer Chromate Works, Bombay, have designed their factory for the use of sodium sulphate left over as a by-product in the bichromates manufacture. The function of coal dust is to act as a reducing agent. The process commonly used by all the factories in India comprises (*a*) roasting of sodium sulphate mixed with coal dust in a large furnace, (*b*) leaching of the resultant melt in water tanks for extracting soluble sulphide, (*c*) concentration of the clear liquor discharged from the tanks and formation of crystals and (*d*) fusion of the crystals in heating pots and packing into drums where it solidifies. Reverberatory furnaces are so far used in India, but it is accepted by the industry that rotary furnaces are more economical and give better efficiency and results. One of the factories (Dharamsi Morarji Chemical Co., Ltd.,) has already taken steps to install a rotary furnace in place of the reverberatory furnace ; while the Jodhpur factory is expecting to install rotary furnaces as soon as the life of the present reverberatory furnaces expires, which should be within a period of three years. The commercial sodium sulphide should ordinarily contain 60/65 per cent. of the pure compound (Na_2S), which is also the strength of the imported sodium sulphide. Although the process of manufacture appears to be simple, it is nevertheless intricate in view of the tendency of the sulphide to revert to the sulphate state, given an opportunity for oxidation at any stage, including the packing. Complicated side reactions take place during reduction, leaching and concentration. Rigorous control and strict supervision are required at every stage in the production, failing which the cost is likely to go up and the quality to suffer.

Uses.

6. The following are the main uses of sodium sulphide :—

(i) in the textile industry, for fixation of sulphur dyes ;

(ii) in the tanning industry, as a depilatory ;

(iii) in the photographic industry (sodium sulphide used here is pure quality as distinct from the commercial quality) ;

(iv) in the paper industry ; and

(v) in chemical industries, as a reducing agent. It is used mainly in the soda ash industry and in the production of fine chemicals.

Domestic demand.

7. There being no indigenous production of sodium sulphide before the war, figures of import of the chemical indicate the domestic demand. An examination of the figures of import of sodium sulphide before the war shows that about 2,000 tons of the chemical constituted the pre-war annual imports, which may, therefore, be taken to be the pre-war annual demand in the country. During the war, the demand grew considerably owing to (1) the greater use of sulphur dyes by the textile industry and (2) the increased demand for tanned leather. The following table gives the figures of imports for the period 1936-37 to 1945-46 showing separately quantity imported, total value of imports, and value of import per cwt. (*vide* Appendix VII).

Year	Quantity in cwts. (000)	Total value Rs. (Lakhs)	Value per cwt. Rs.	a.	p.
1936-37	34·89*	1·66	4	12	1
1937-38	62·76	3·28	5	3	7
1938-39	30·37	2·11	6	15	2
1939-40	73·48	7·01	9	8	8
1940-41	50·35	5·95	11	13	1
1941-42	66·15	11·31	17	1	7
1942-43	39·69	8·00	20	2	6
1943-44	30·49	7·29	23	14	7
1944-45	39·51	7·24	18	5	2
1945-46†	43·79	7·80	17	13	0

*Excluding imports into Burma.

†For nine months from April to December.

As for the future, the concensus of opinion is that the annual demand for the next three years should be put at 3,000 tons of sodium sulphide. There will be less consumption by the textile industry in view of the gradual replacement of sulphur dyes by vat dyes though it may be mentioned here that the President of the Bombay Presidency Chemical Manufacturers' Association stated at the inquiry that arrangements had been completed for the manufacture of sulphur dyes in India shortly by a particular concern. The demand of the tanning industry and the general chemical industry should be more or less the same as before. The break-up of the estimated demand, prepared in consultation with the industry, importers and consumers, is as under :—

	Tons.
Textile industry	1,200
Tanning industry	800
General chemical industry	1,000
Total ..	3,000

We have not included the requirements of the photographic industry in the above estimate, as they are in respect of pure sodium sulphide as distinct from the commercial 60/65 per cent. quality and as they are received in small packs. We have also not taken into account the sodium sulphide required by the paper industry, as we were told that the usual practice of this industry was to take sodium sulphate and to reduce it to sodium sulphide just before use in the paper mills themselves.

Domestic production.

8. A perusal of Appendix IV would show that there is more capacity for the production of sodium sulphide in the country than is necessary to meet the domestic demand. Even if a few of the smaller factories go out of existence, some can still remain in production in view of the advantage enjoyed by them in respect of the main raw material (sodium sulphate) and in any case the big factory at Jodhpur with a capacity of 3,000 tons per annum can meet the requirements of the country during the next three years, provided the initial difficulties are overcome and full production is attained. A ton of sodium sulphide requires a little less than 2 tons of sodium sulphate. For the production of 3,000 tons of sodium sulphide, the raw material required is not more than 6,000 tons of sodium sulphate which is easily available in the country both at Didwana and at certain individual chemical factories. The coal is also available and, therefore, there should be no difficulty in producing in the country all the sodium sulphide required by it. One informed estimate of the extent of the deposits of sodium sulphate at Didwana puts these at 2,50,000 tons – sufficient to meet the requirements of the country for over 40 years.

Quality of the indigenous product.

9. The different factories have produced sodium sulphide of the requisite strength which has been approved by consuming industries. Occasional complaints have been made that the chemical is below strength, but given proper care and precaution in the manufacture and at the time of packing, the Board sees no reason why the quality of the indigenous product should be inferior to that of the imported product. The expert opinion on the subject consulted by the Board

also testifies to the possibility of making the chemical of the right quality in India. Preference for the imported product on the part of some consumers has been noticed, but this is not unusual in the case of a new industry, and it is expected that this initial prejudice will disappear in due course. The Indian producers must take care to see that the chemical is of the right strength uniformly in all parts of a drum in which it is packed, which is said to be the case with the imported material.

Cost of production.

10. (1) Although the sodium sulphide industry had applied for protection and its case had been referred to the Tariff Board for investigation, the industry was not ready with facts and figures of cost of production based on sustained manufacture over a reasonable period, say, twelve months, or on a reasonable output of even 1,000 tons. Indeed, one of the applicants, namely, Chemicals and Solvents, Ltd., of Calcutta, informed the Board that they were not now producing the chemical, were no longer interested in the hearing of the case and they did not send a representative to attend the public inquiry. The Jodhpur factory, the biggest unit in the industry, has not commenced production on a commercial scale and could not furnish data as regards actual cost of production. No representative of the Jodhpur concern attended the public inquiry, although the factory was visited by the Board at the request of the proprietors, its accounts were costed by a Cost Accounts Officer deputed by the Board, and the proprietors of the factory were specially requested to be present at the oral hearing. Despite these handicaps and difficulties, the Board examined the actual cost of production of the Dharamsi Morarji Works which have produced some sodium sulphide and built up, in consultation with the factories concerned, an estimate of cost of production of the Jodhpur factory which may be reckoned as the principal unit in the industry during the next three years as well as of the Dharamsi Morarji Works when in full production.

(2) Appendix V gives the future cost of production of sodium sulphide at the Jodhpur factory as estimated by the Board. It will be observed that we have prepared different estimates based on different scales of output, different prices of sodium sulphate, and different processes, that is, whether the furnace used is reverberatory or rotary. When the factory is run on sound business lines, it should use a rotary furnace and produce 10 tons a day, and have sodium sulphate made available to it at *not more* than Rs. 50 per ton. In those circumstances, the cost of sodium sulphide, inclusive of profit on fixed capital, taking into account the cost of a rotary furnace, should be Rs. 15-8-0 per cwt., which is a favourable cost figure compared with the cost of imported sodium sulphide. As the rated capacity of the Jodhpur factory is 3,000 tons, there should be no difficulty in the output reaching the daily figure of 10 tons as assumed in this estimate. Since the industry agrees that a rotary furnace is better and more economical than a reverberatory furnace, it should adopt rotary furnace as early as possible ; and until this is done, it cannot lay claim to being run on sound business lines. As for sodium sulphate, the Board is of the opinion that the price of Rs. 50 per ton delivered at the factory, Jodhpur, would be very reasonable and leave ample profit to the Jodhpur States. The Board has seen an estimate of the cost of production of sodium sulphate at Didwana prepared during wartime when prices and wages were high, but even then the cost was not more than Rs. 5-7-0 per ton, inclusive of cost of despatch and transport. As against that, the Jodhpur Government is charging this factory as also other users of sodium sulphate in British India a price of Rs. 95 per ton f. o. r. Didwana. The sulphate is despatched in bags costing Rs. 13 per ton. Bagging is unnecessary and could be dispensed with. The freight from Didwana to Jodhpur is roughly

Rs. 12-4-0 per ton. Even if we put the cost of production of sodium sulphate at Didwana at double the estimate mentioned above, that is, at Rs. 10 per ton, a price of Rs. 50 per ton will still leave a profit of about Rs. 28 per ton to the Jodhpur Government (Rs. 50 *minus* Rs. 10 cost *minus* Rs. 12 freight), which, on a cost of production of Rs. 10 per ton, gives a profit of 280 per cent. We have given these calculations to show that we have adopted a very reasonable price at which sodium sulphate should be made available to the sodium sulphide factory at Jodhpur, failing which it would not be possible for the sulphide industry to survive foreign competition. Protection against competition can be assured only if the indigenous industry fulfils the condition that it is run on sound business lines and that it obtains raw materials at reasonable prices. The higher price for sodium sulphate charged by the Jodhpur Government is presumably based on its market price in the country; but that, as pointed out previously by the Supply Department to the Jodhpur Government, is neither relevant nor reasonable, if they desire to encourage the development of the sodium sulphide industry within the State, and particularly if, as a result of the higher price of sodium sulphate, the sulphide industry cannot compete with imports and asks for additional protection. In such a case, the price charged for the sodium sulphate supplied to the sodium sulphide factory should be related to its cost of production. The Jodhpur factory has complained that the rail freight of Rs. 12-4-0 charged by the Jodhpur State Railways for transport of sulphate from Didwana to Jodhpur, a distance of 132 miles, is excessive and should be reduced. It is not the practice of the Board to go into questions of railway freight which should be mooted by the factory concerned before the appropriate authority, namely, the Railway Rates Advisory Committee. The Jodhpur factory has two sections, the main one of which is devoted to the manufacture of sodium sulphide and the subsidiary one to the production of glauber salt; and this factor has been taken into consideration in allocating fixed capital to the sulphide department. The fixed capital assumed is Rs. 3 lakhs and is based on estimated cost of buildings, plant and stores. As for the working capital, we have taken a figure equivalent to four months' cost of production, and interest has been allowed thereon at 4 per cent. per annum, as is the practice of the Board. The other items, such as labour, repair and consumable stores and packing, call for no comments. An addition of Rs. 1 lakh has been allowed in the fixed capital to represent the estimated cost of the rotary furnace to be installed and consequential changes have been made in depreciation and profit. There is another item of cost which the Jodhpur factory has to bear, but for which we have not made any provision in the estimate of cost of production. It is in regard to the royalty which the firm has to pay to the Jodhpur State at the rate of 20¼ per cent. on the sales value of sodium sulphide. It was represented to the Board that this royalty was levied in lieu of customs duty on import of machinery, equipment, etc., and certain other concessions which the factory enjoyed. It is, however, in the nature of an export duty, and cannot be regarded as an allowable item of expenditure in the case of an industry which requires protection for its survival. We have, therefore, not allowed this item in the estimate of cost of production. Subject to the comments mentioned above, the estimate of cost of production works out as follows :—

	Rs.	a.	p.	
(*a*)	25	11	0	per cwt., if production is 5 tons a day, sulphate is available at the present rate of Rs. 107-4-0 a ton, and reverberatory furnace is used ;
(*b*)	19	14	0	per cwt., with a production of 5 tons, price of sodium sulphate at Rs. 50 per ton, and use of reverberatory furnace ;
(*c*)	17	6	0	per cwt., with a production of 8 tons a day, sodium sulphate at Rs. 50 a ton, and use of reverberatory furnace ; and
(*d*)	15	8	0	per cwt., with a production of 10 tons a day, sulphate at Rs. 50 a ton, and rotary furnace used in place of reverberatory furnace.

We have not added to these figures a freight equalization charge which will have to be added to put the Jodhpur factory on par with importers who have the facility of delivery of their goods at port.

(3) Appendix VI gives the estimate of cost of production of sodium sulphide by the Dharamsi Morarji Chemical Works at Ambernath, Bombay. As compared with the Jodhpur factory, the cost of the raw material is lower because of the use by this factory of sodium sulphate which is a by-product of the hydrochloric and nitric acids produced at the factory. The sulphate contains a certain amount of acid and has to be neutralised by being roasted with rice husk in a furnace before it is charged into the reverberatory furnace along with powdered coal. The cost of production, plus profit on fixed capital, comes to Rs 22 per cwt., which is higher than the corresponding figure at the Jodhpur factory under conditions of sound business. For purposes of protection, it is the lower cost of production which should be adopted. The management of the Dharamsi Morarji Works hopes to work the rotary furnace shortly, when it is expected that the cost will be reduced to Rs. 20 per cwt., if not lower.

(4) For purposes of comparison we may give the cost of production of sodium sulphide by some of the factories, which have produced the chemical and which are interested in the case for protection. The Liberty Chemical Works, Bombay, estimates its cost at Rs. 114, per cwt., in regard to past production and Rs. 44 in regard to future production. Chemicals and Solvents, Calcutta, have given their cost as Rs. 91, Rs. 113, and Rs. 76 per cwt. in 1943, 1944 and 1945, respectively. These figures are so high that they cannot be considered as a suitable basis for protection.

Existing rate of customs duty.

11. Sodium sulphide falls, for purposes of customs classification, in item No. 28 in Section VI, for which the duty prescribed is 36 per cent. *ad valorem* standard, 24 per cent. *ad valorem* if imported from U. K. or a British colony, and 12 per cent. *ad valorem* if imported from Burma, it being a preferential revenue duty. A tariff value of Rs. 16 per cwt. has been fixed for sodium sulphide, this value being applied to articles packed in containers of not less than 14 lbs.

12. Two of the leading importers have given the following figures of prewar

C.i.f. prices and landed costs.

and latest c.i.f. prices and landed costs of sodium suphide imported from the United Kingdom :—

(Per cwt.)

	Pre-war	Present	
		One firm	The other firm
	Rs. a. p.	Rs. a. p.	Rs. a. p.
C.i.f. price	6 8 4	14 5 4	19 5 4
Customs duty (at 20% pre-war and 24 % present).	1 4 10	3 7 8	4 7 1
Clearing and other charges	Practically nil.	0 8 7	1 8 2
Total landed cost	7 13 2	18 5 7	24 15 7
Importers' selling price	8 4 2	19 9 6	Not given.

These figures apply to sodium sulphide of 60/65 per cent strength commercial quality. At present the retail selling price of sodium sulphide imported by the I. C. I. (India) is Rs. 20-8-0 per cwt., although it was mentioned at the inquiry that few consumers got the chemical at that price, indicating the existence of malpractices such as favouritism in sales, sales conditional upon consumers buying some of the other unwanted chemicals from the same firm, etc. During the war, the c.i.f. price varied from Rs. 12-4-0 to Rs. 22 per cwt., but for most of the time it was Rs. 13-5-4 per cwt. The landed costs of the fused pure quality, which is imported in small packs of one pound, are very much higher, being Rs. 252 per cwt., the selling price of the importers being Rs. 329 per cwt. As mentioned previously, this variety is chemically pure and is intended for photographic purposes only. It was agreed by all present at the public inquiry, that the only source from which imports of sodium sulphide may be expected so as to compete with the Indian production would be the United Kingdom, for imports from where the above landed costs have been given. For purposes of determining competition we should take the lowest landed cost which is Rs. 18-5-7 per cwt. This landed cost, if maintained during the next three years, will cover the cost of production at Jodhpur, *vide* para. 10 (2) above. Indeed when the Jodhpur factory is working full capacity and at its best, the cost should be Rs. 15-8-0 per cwt. against the landed cost of Rs. 18-5-7 per cwt. known at present. If and when the industry is established and conducted on efficient lines as stated above and the landed cost comes down substantially, it will be entitled to ask for a reconsideration of its claim to protection.

Claim for protection examined.

13. The industry asked that protection should be afforded to it by a total prohibition of import of sodium sulphide, failing which there should be a quantitative restriction on imports coupled with a 100 per cent. *ad valorem* tariff duty. There is a restriction on import of sodium sulphide on the ground that there is adequate productive capacity in the country. The production has however fallen considerably short of the requirements, with the result that consumers have been starved of their requirements. Until there is actual production of the chemical in sufficient quantity to meet the entire demand, total or even partial prohibition of imports is neither desirable nor justifiable. As a rule, the Board is against even quantitative restriction of imports as a means of protection and prefers an adequate import duty for the purpose. Figures of landed costs and estimated cost of production when the industry is run on sound business lines show that the present duty is sufficient to protect the Indian industry and that no addition to the duty would be justified, the more so as the industry is not yet run on sound business lines, has not yet attained the rated production and has not yet adopted the most economical methods of manufacture. The industry does not, therefore, in the opinion of the Board, fulfil the first condition for eligibility for protection, namely, that it should be run on sound business lines. It has no doubt natural advantages in that (*a*) the raw materials are available in the country, (*b*) the product is one which is essential for the maintenance of two of our most important industries, namely, the textile and tanning industries, and there is consequently a market for the product, and (*c*) the process of manufacture is comparatively simple. But no case has been made out for the grant of protection at the present stage. This inquiry, however, shows that, as soon as the industry puts its house in order, it would be entitled to ask for a reconsideration of its claim for protection, should it be found that there is still a gap between the cost of production under optimum conditions and the lowest landed cost from the principal competing country. It should be emphasised that, in the opinion of the Board, this position will not have been reached until the Jodhpur factory is supplied with sodium sulphate by the Jodhpur State Government at a price not exceeding Rs. 50 per ton delivered at Jodhpur and the factory has reached the maximum planned capacity of 10 tons a day. To enable the factory to go ahead with its plans for development with confidence and a sense of security, it will be desirable for Government, while passing orders on this report, to state clearly that the industry would be granted protection if it satisfies the conditions laid down by the Board for being regarded as run on sound business lines. The Board hopes that the Jodhpur State will appreciate the reasonableness of this recommendation and will co-operate with the industry, the survival of which will help the State in exploiting its sulphate deposits, apart from granting many other social benefits to the State consequent upon increased industrial activity. In the meantime, the restriction on the importation of sodium sulphide should be relaxed and the chemical should be placed on the Open General Licence, so that the consuming interests may not suffer.

Refund of duty on import of rotary furnace.

14. As installation of a rotary furnace is essential to the proper development of the sodium sulphide industry and as big rotary furnances are not manufactured in the country, the Board recommends that the duty paid on import of rotary furnaces by manufacturers of sodium sulphide since the date of the reference of this case to the Board, i.e., 4th May 1946, should be efunded.

Summary of conclusions and recommendations.

15. Our conclusions and recommendations are summarised as under :—

(i) The pre-war domestic demand for sodium sulphide was about 2,000 tons per annum. It is estimated that the future annual requirements of the chemical would be approximately 3,000 tons. Paragraph 7.

(ii) The productive capacity of the existing plants is more than sufficient to meet the domestic demand provided the initial difficulties are smoothed over. The factory at Jodhpur itself has a capacity of 3,000 tons. Paragraph 8.

(iii) The Board sees no reason why the quality of the indigenous product should be inferior to that of the imported product, provided proper care is taken in the manufacture. Paragraph 9.

(iv) The industry was not ready with facts and figures of the cost of production, based on sustained manufacture over a reasonable period or on a reasonable output of even 1,000 tons. The Board has, however, worked out the cost of production of the Jodhpur factory under certain assumptions. The estimated costs works out as follows :—

	Rs.	a.	p.	
(*a*)	25	11	0	per cwt. if production is five tons per day, sulphate is available at the present rate of Rs. 107-4-0 per ton and reverberatory furnace is used.
(*b*)	19	14	0	per cwt. with a production of five tons, price of sodium sulphate at Rs. 50 a ton and use of reverberatory furnace.
(*c*)	17	6	0	per cwt. with a production of eight tons per day, sodium sulphate at Rs. 50 per ton and use of reverberatory furnace.
(*d*)	15	8	0	per cwt. with a production of ten tons a day, sulphate at Rs. 50 a ton and rotary furnace used in place of reverberatory furnace.

The cost of production of Dharamsi Morarji Works came to Rs. 22 per cwt. based on actual costs of working. It is expected that the cost of production will be reduced to Rs. 20 in the near future. Paragraph 10.

(v) For the purpose of determining competition the lowest cost of import has been taken and it works out to Rs. 18-5-7 per cwt. This landed cost if maintained during the next three years will cover the cost of production at Jodhpur. If and when the industry is established and conducted on efficient lines as stated above and the landed cost comes down substantially, it will be entitled to ask for a reconsideration of its claim to protection.

(vi) The industry does not fulfil the first condition for eligibility for protection, viz., that it should be run on sound business lines. It has, no doubt, natural advantages, but no case has been made out for the grant of protection at the present stage. The Board hopes that the Jodhpur State Government will supply the Jodhpur factory with sodium sulphate at a price not exceeding

Rs. 50 per ton. The Board also recommends that the restriction on the importation of sodium sulphide should be relaxed and the chemical should be placed under Open General Licence so that the consuming interests may not suffer. Paragraph 13.

(vii) The Board recommends that the duty paid on the import of rotary furnaces by manufacturers of sodium sulphide since the date of the reference of this case to the Board, i.e., 4th May 1946, should be refunded. Paragraph 14.

Acknowledgments.

16. The thanks of the Board are due to the Jodhpur Government for co-operating with the Board in the conduct of this inquiry and for granting all facilities to visit the factory at Jodhpur, to Dr. J. N. Ray of the Department of Industries and Supplies, and Dr. L. Gupta of Amritsar, for offering valuable advice, and to Mr. P. V. Raghava Rao, Cost Accounts Officer attached to the Board, Rai Sahib S. C. Aggarwal, Deputy Secretary, Dr. Rama Varma, Assistant Secretary, and Mr. S. D. Sunawala, Technical Adviser (Chemicals) to the Board, for helping in and supervising the preparation of the case.

(Signed) SHANMUKHAM CHETTY—PRESIDENT.

(Signed) C. C. DESAI—MEMBER-SECRETARY.

(Signed) H. L. DEY—MEMBER.

(Signed) S. C. AGGARWAL—DEPUTY-SECRETARY.

Bombay, dated 13th January 1947.

APPENDICES

APPENDIX I

List of persons, associations and firms to whom the Board's questionnaire was issued

(A) ***Producers*** **:—**

1. Jodhpur Sulphide Factory (United Trading Company Chemical Factory, Jodhpur).
2. The Premier Chromate & Chemical Works, Ltd., 402, Cadell Road, Mahim.
3. Narayan Chemical Works, 8-A, Rash Behari Avenue, P. O. Kalighat, Calcutta.
4. Liberty Chemical Works, 205, Mangaldas Building, Kitchen Garden Lane, Bombay 2.
5. A. R. Mazumdar & Co., 137, Canning Street, Calcutta.
6. Chemicals & Solvents Ltd., 23, Canning Street, Calcutta.
7. The Pioneer Chromate Works, Ltd., Currimbhoy House, Outram Road, Fort, Bombay.
8. Ramco Chemical Works, Kapasia Bazar, Railwaypura, P. O., Ahmedabad.
9. Rhotas Industries, Ltd., Dalmianagar.
10. Sonawala Industries Ltd., Sonawala Estate, Tardeo, Bombay 7.
11. Narayan Chemical Industries, Raopura, Baroda.
12. Caprihan Chemicals, Agra.
13. Maneklal Auxiliary Products, Examiner Press Building, Dalal Street, Fort, Bombay.
14. A. Mumtaz & Co., No. 1, Colutolla Street, Calcutta.
15. Indentors' Syndicate, Advani Chambers, Sir Pherozshah Mehta Road, Fort, Bombay.
16. The Mettur Chemical & Industrial Corporation Ltd., Mettur.
17. Cawnpore Chemical Works, Ltd., Anwargunj, Cawnpore.
18. Krishna Chemical Works, Ltd., Sodepure. 24, Parganas, Bengal.

19. Morarjee Chemical Co., Ltd., 317-27, Hornby Road, Prospect Chambers, Fort, Bombay.

20. The Dharamsi Morarji Chemical Co., Ltd., Ambernath.

21. S. M. Bothra Esq., Nagpur.

22. Kamani Metal Refinery & Metal Industries, Ltd., Jaipur.

23. The Associated Chemicals, Ltd., Bagadgunj, Itwari, Nagpur.

24. Government Bichromate Factory, Belagula (Mysore).

25. Narayan Dyestuff & Chemical Works, Ltd., Kalighat, Calcutta.

(B) *Importers* :—

1. Imperial Chemical Industries (India), Ltd., 18, Strand Road, Calcutta.
2. Kantavala Nanavati & Co., Ltd., 16, Apollo Street, Fort, Bombay.
3. Volkart Brothers, Graham Road, Ballard Estate, Bombay.
4. Kodak Ltd., Kodak House, Hornby Road, Bombay.
5. Martin & Harris, Ltd., Wallace Street, Fort, Bombay.

(C) *Consumers* :—

1. Calico Dyeing & Printing Works, Suryodaya Mills Compound, Tardeo, Bombay.
2. The Shree Niwas Cotton Mills, Ltd., Delisle Road, Bombay.
3. Jamnadas Dyeing & Bleaching Mills, 95, Ferguson Road, Lower Parel, Bombay.
4. Chromes, Ltd., Chromepet, Madras.
5. Bata Shoe Co., Ltd., Batanagar, 24 Parganas, Bengal.
6. The Upper India Tanneries Ltd., Nakodar Road, Jullunder City.

(D) *Associations* :—

1. Bombay Province Chemical Manufacturers' Association, 45/47, Apollo Street, Fort, Bombay.
2. Indian Chemical Manufacturers' Association, 102-A, Clive Street, Calcutta.

APPENDIX II

List of persons and associations or firms from whom replies or memoranda were received.

Producers :—

1. Jodhpur Sulphide Factory, (United Trading Company, Chemical Factory, Jodhpur).
2. Liberty Chemical Works, 205, Mangaldas Building, Kitchen Garden Lane, Bombay 2.
3. Chemicals and Solvents, Ltd., 23, Canning Street, Calcutta.
4. The Dharamsi Morarji Chemical Co., Ltd., Ambernath.

Importers :—

1. Imperial Chemical Industries (India), Ltd., 18, Strand Road, Calcutta.
2. Volkart Brothers, Graham Road, Ballard Estate, Bombay.
3. Martin and Harris, Ltd., Wallace Street, Fort, Bombay.

Consumers :—

1. Calico Dyeing & Printing Works, Suryodaya Compound, Tardeo, Bombay.
2. The Shree Niwas Cotton Mills, Ltd., Delisle Road, Bombay.
3. Jamnadas Dyeing & Bleaching Mills, 95, Ferguson Road, Lower Parel, Bombay.
4. Chromes, Ltd., Chromepet, Madras.
5. Bata Shoe Co., Ltd., Batanagar, 24 Parganas, Bengal.
6. The Upper India Tanneries, Ltd., Nakodar Road, Jullunder City.

APPENDIX III

List of producers, consumers and importers who were examined on the 16th December 1946.

Producers :—

1.	Mr. P. V. Paranjpe	.. Representing Dharamsi Morarji Chemicals, Ltd., Ambernath.
2.	Mr. Purshotam Lal Popatlal	. Representing the Pioneer Chromate Works, Ltd., Bombay.
3.	Mr. K. M. Patel	.. Representing the Liberty Chemical Works, Bombay.

Importers :—

Mr. A. R. Leyden	.. Representing Allied Photographics, Bombay, who have since taken over business from Messrs. Martin & Harris Ltd., Bombay.

Consumers :—

Mr. Prabhu V. Mehta	.. Representing Calico Dyeing & Printing Works, Bombay.

Associations :—

Dr. L. A. Bhatt	.. Representing the Bombay Province Chemical Manufacturers' Association, Bombay, and Indian Chemical Manufacturers' Association, Calcutta.

APPENDIX IV

Statement showing names of manufacturers of Sodium Sulphide, location of their factories and their production capacity.

	Name and address of the Factory	Location	Date of commencement of production	Annual production capacity as declared by the factory	Actual production from September 1944 to August 1945 or the latest year available	Remarks.
1.	Liberty Chemical Works Bhaidas Estate, Nagardas Road, Andheri (East).	Andheri, Bombay Province.	July 1943	180 tons	Started manufacture of Sodium Sulphide in July 1943 and continued till the end of September 1943, the total production for the period was 12 tons.	
2.	Ramco Chemical Works	Factory at Barejadi (B. B. & C. I.), P. O. Nandej, Ahmedabad District.	1942	150 tons	Nil.	
3.	Chemicals & Solvents, Ltd., Post Box 707, G. P. O., Calcutta.	Original factory at 111/3, Gopal Lal Tagore Road, Alambazar, P. O. 24 Parganas.	November 1941	200 tons	1943 89·873 tons. 1944 45·932 tons. 1945 50·342 tons.	
4.	United Trading Co., Chemical Factory, Jodhpur (Rajputana).	Near Bhagath Kikethi, Jodhpur, about 2 miles from Jodhpur Railway Station.	June 1946	3,000 tons	Not yet produced.	
5.	The Dharamsi Morarji Chemical Co., Ltd., Ambernath, Taluka Kalyan, Thana District.	Ambernath, Taluka Kalyan, Thana District.	Trials in the year 1924, started in August 1945.	180 tons	106·293 tons for 11 months from August 1945 to June 1946..	

6.	Cawnpore Chemical Works, Cawnpore.	G. T. Road, Anwargunj, Cawnpore.	April 1945 ..	360 tons ..	85 tons for eight months till the end of December 1945.
7.	Nanavati Oil & Chemical Industries, Ltd., Bombay.	Factory at Planet Mill, Fergusson Road, Lower Parel, Bombay.	10th October 1945 ..	208 tons ..	Factory worked only up to January 1946 so the factory could produce only 50 tons approximately.
8.	The Pioneer Chromate Works, Ltd., Bombay.	Marole Road, Andheri ..	Expected to reach production stage on or about 1st April 1947.	540 tons ..	Nil. but produced about 100 tons during 1943.

Total annual production capacity in India = 4818 tons.

APPENDIX V

Board's Estimate of the cost of production of Sodium Sulphide by the Jodhpur Factory.
(United Trading Company, Jodhpur)

Items	Future Cost Per Ton											
	Basis. Production 5 tons a day			Basis. Production 5 tons a day			Basis. Production 8 tons a day			Basis. Production 10 tons a day		
	Sulphate at Rs. 107·25 a ton			Sulphate at Rs. 50 a ton			Sulphate at Rs. 50 a ton			Sulphate at Rs. 50 a ton		
	Reverberatory Furnace			Reverberatory Furnace			Reverberatory Furnace			Rotary Furnace		
	Quantity	Rate	Rs.	Quantity	Rate	Rs.	Quantity	Rate	Rs.	Quantity	Rate	Rs.
(1) Materials :—												
(a) Sodium Sulphate ..	2 tons ..	Rs. 107·25	214·50	2tons ..	Rs. 50·00	100·00	2 tons ..	Rs. 50·00	100·00	1·67 tons	Rs. 50·00	83·50
(b) Coal ..	1 ton ..	Rs. 34·31	34·31	1 ton ..	Rs. 34·31	34·31	1 ton ..	Rs. 34·31	34·31	83 tons .	Rs. 34·31	28·48
(2) Power and Fuel ..			64·44			64·44			64·44			59·70
(3) Labour ..			38·60			38·60			24·13			17·61
(4) Repairs and Maintenance.			16·05			16·05			16·05			16·05
(5) Consumable Stores ..												
(6) Establishment —			39·10			39·10			24·44			19·55
(7) Depreciation —			19·93			19·93			12·46			14·97

(8) Other Overheads ..		15·70		15·70		9·81		7·85
(9) Packing charges ..		45·00		45·00		45·00		45·00
(10) Selling Expenses ..		....		....		....		....
(11) Interest on Working Capital.	(On Rs. 2·4 lakhs)	6·40	(On Rs. 1·9 lakhs)	5·06	(On Rs. 2·6 lakhs)	4·33	(On Rs. 2·9 lakhs)	3·87
Total Cost ..		494·03		378·19		334·97		296·58
(12) Profit at 10 per cent on Fixed Capital (Rs. 3 lakhs).		20·00		20·00		12·50	(Rs. 4 lakhs)	13·33
		514·03 or Rs. 25/11 per cwt.		398·19 or Rs. 19/14 per cwt.		347·47 or Rs. 17/6 per cwt.		309·91 or Rs. 15/8 per cwt.

APPENDIX VI.

Estimate of cost of production of Sodium Sulphide by Dharamsi Morarji Chemical Company, Limited, Bombay.

Items	Future Cost per ton		
	Quantity	Rate	Rs.
(1) Materials :—			
(a) Sodium Sulphate	1·8 tons	Rs. 30·960	55·73
(b) Coal dust	1.0125 tons.	Rs. 31·000	31·38
(2) Power and fuel	....	....	77·50
(3) Labour	....	....	88·00
(4) Repairs and maintenance	....	....	17·44
(5) Consumable Stores	....	....	14·72
(6) Establishment	....	....	23·28
(7) Depreciation	....	....	26·49
(8) Other Overheads	....	....	21·86
(9) Packing charges	....	....	52·63
(10) Selling expenses	....	....	....
(11) Interest on Working Capital (Rs. 25,000).	....	....	5·56
Total Cost	....	....	414·59
(12) Profit at 10 per cent. on Fixed Capital (Rs. 45,000).	....	....	25·00
			439·59 or Rs. 22 per cwt.

APPENDIX VII.

Statement of Imports of Sodium Sulphide showing the quantity, the value and the average value per cwt. since 1936-37.

		1936-37	1937-38	1938-39	1939-40	1940-41	1941-42	1942-43	1943-44	1944-45	1945-46†
Quantity of Imports from :—											
1. U. K.	Cwts. (000)	29·14	36·83	22·19	38·82	36·84	18·66	20·68	16·40	Information not available	
2. Germany		4·89	10·33	4·40	6·93	....	....	....	....	,,	,,
3. Netherlands	,,	....	1·96	0·28	0·99	0·16	....	....	....	,,	,,
4. Belgium	,,	....	5·62	0·84	2·79	2·93	....	....	....	,,	,,
5. France	,,	0·56	0·59	0·74	1·10	1·19	....	....	....	,,	,,
6. Japan	,,	8·05	2·98	1·93	15·42	2·63	29·54	....	....	,,	,,
7. China	,,	....	....	....	3·67	0·80	0·63	....	....	,,	,,
8. U. S. A.	,,	....	....	....	3·67	5·81	17·09	19·00	14·08	,,	,,
9. Other Countries	,,	1·31	9·45	....	0·09	....	0·23	0·01	0·01	,,	,,
Total Imports	,,	34·89*	62·76	30·37	73·48	50·35	66·15	39·69	30·49	39·51	43·79

*Excluding Imports into Burma.

†For nine months from April to December.

Statement of Imports of Sodium Sulphide showing the quantity, the value and the average value per cwt. since 1936-37.

		1936-37	1937-38	1938-39	1939-40	1940-41	1941-42	1942-43	1943-44	1944-45	1945-46†
II. Value of Imports from :—											
1. U. K.	Rs. (Lakhs)	1·62	2·00	1·57	3·03	4·10	3·53	4·37	3·82	Information	not available.
2. Germany	,,	0·23	0·56	0·30	0·44	—..	—..	....	....	,,	,,
3. Netherlands	..	....	0·10	0·02	0·07	0·03	....	——	....	,,	,,
4. Belgium	,,	....	0·03	0·06	0·39	0·47	....	——	..—	,,	,,
5. France	,,	0·02	0·03	0·04	0·03	0·24	——	——	..—	,,	,,
6. Japan	,,	0·31	0·16	0·12	2·02	0·36	4·59	—..	..—	,,	,,
7. China	,,	....	....	..—	0·53	0·09	0·09	——	——	,,	,,
8. U. S. A.	..	...—	....	....	0·41	0·66	3·07	3·68	3·47	,,	,,
9. Other Countries	,,	0·05	0·40	....	0·04	..—	0·03	——	——	,,	,,
Total Imports	..	1·66*	3·28	2·11	7·01	5·95	11·31	8·00	7·29	7·24	7·80

*Excluding Imports into Burma.

†For nine months from April to December.

Statement of Imports of Sodium Sulphide showing the quantity, the value and the average value per cwt. since 1936-37.

		1936-37	1937-38	1938-39	1939-40	1940-41	1941-42	1942-43	1943-44	1944-45	1945-46
III. Average value of Imports from :—											
1. U. K.	Rs. as.	5 9	5 7	7 1	7 13	11 2	18 14	21 2	23 5	Information not available.	
2. Germany	,,	4 13	5 7	6 12	6 6	....	....	....	....	,,	,,
3. Netherlands	,,	....	5 1	6 7	6 15	18 2	....	....	....	,,	,,
4. **Belgium**	,,	....	5 10	6 12	13 14	16 3	....	....	....	,,	,,
5. **France**	,,	4 0	5 4	5 15	7 3	20 0	....	....	....	,,	,,
6. **Japan**	,,	3 14	5 8	6 7	13 2	13 10	15 8	....	....	,,	,,
7. **China**	,,	....	....	....	14 9	11 1	13 13	....	....	,,	,,
8. U S. A.				....	11 5	11 5	17.15	19 1	24 10	,,	,,

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